

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



VOLUME XVII.

LIBRARY  
RECEIVED  
FEB 17 1911  
U. S. Department of Agriculture  
NUMBER 4

# THE AGRICULTURAL STUDENT

A MONTHLY MAGAZINE DEVOTED TO AGRICULTURAL EDUCATION



DECEMBER, 1910

10 Cents per Copy

50 Cents per Year

# How to Own The Oliver Typewriter for 17c a Day

You don't have to draw on your Bank Account when you pay on the Penny Plan.

You need not disturb your Dollars. **Keep them at work earning interest!**

We offer our newest model, the Oliver No. 5—fresh from the factory—for Seventeen Cents a day.

The plan is printed in "black and white" on the Application Blank below.

Simply fill out the blank, attach the small first payment, send it in, and on comes the Oliver!

No tedious wait! No red tape! No long-drawn-out correspondence!

You quickly own your Oliver and scarcely notice the outlay. You can have the use of your machine while pennies are "paying the freight."

You will never have a better chance to test the power of pennies.

The Oliver is **everywhere**.

It's the **universal** typewriter. Reels off real work with the ease and speed demanded by this mile-a-minute age. Wherever you turn—in Business Offices, great and small—in the quiet of

the Home—in the roar of the Railroad and Telegraph service—in the seething maelstrom of modern Newspaperdom—in countless kinds of service—it's the sturdy, strenuous Oliver that's "making the wheels go 'round.'"

## The OLIVER Typewriter

The Standard Visible Writer

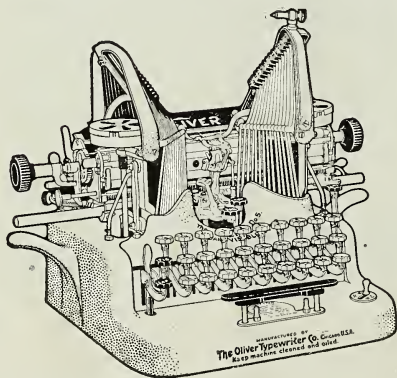
You need your Oliver **now**. It's yours almost for the **asking**. The biggest hundred dollars' worth in America—for Seventeen Cents a Day!

Send along the Application Blank, with a small first payment of \$15 as an evidence of good faith.

Your check is good—or send draft, postoffice or express money order.

### THE OLIVER TYPEWRITER AGENCY,

206-207 Schultz Bldg., Columbus, Ohio.



### APPLICATION BLANK

THE OLIVER TYPEWRITER CO.,  
The Oliver Typewriter Bldg.,  
Chicago, Illinois.

Gentlemen:—I accept your offer of the latest model No. 5 Oliver Standard Typewriter for Seventeen Cents a Day. Enclosed please find \$15 as evidence of good faith. I agree to save 17 cents a day and remit the balance, \$85, in monthly installments. Title to remain in your name until the machine is fully paid for.

Name .....

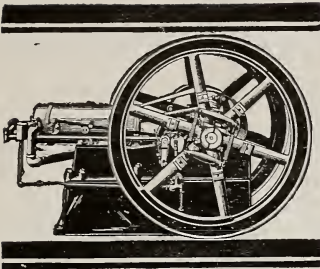
Address .....

Town..... State.....

References .....

Advertisers are worthy of your patronage. Help them.





## WHY YOUR ENGINE IS IN THE I H C LINE

**Y**OU want the simplest, most economical, most reliable and most durable engine made. You want the one that saves the most work, time and money. In short, you want the engine that pays the biggest dividends. That is why your engine is in the I H C line.

After carefully investigating other engines, thousands have chosen from the I H C line. They now know what perfect power-service means, for I H C engines are unequalled for running the many machines on the farm—such as cream separator, wood saw, feed cutter, churn, grindstone, fanning mill, corn sheller, thresher, shredder, pump, etc.

Wherever you go—I H C engines are giving satisfactory service. Judge by what they are doing for thousands. Judge by comparison—point by point—with other engines. To be absolutely sure of getting the engine that will mean most to you—choose out of the line of

## I H C Gasoline Engines

### A Size and Style To Suit Every Need

You will get the engine that is best adapted to your work. You will get the engine that will work simplest, cheapest and best. You will get a simple engine that you can depend on. I H C engines are made in many sizes and styles. Whichever one you choose—is best in its class.

I H C Vertical engines are made in 2, 3 and 25-horsepower; I H C Horizontal engines (portable and stationary) are made in 4, 6, 8, 10, 12, 15, 20 and 25-horsepower; Famous air-cooled engines are made in 1, 2 and 3-horsepower; Hopper cooled engines are made in 2, 2½, 3, 4, 6 and 8-horsepower; and there are also I H C sawing, spraying and pumping outfits—besides the International tractors—successful in every contest, winning the highest honors at home and abroad—made in 12, 15 and 20-horsepower sizes.

See the local International dealer at once. Let him tell you all about the I H C engine that meets your needs exactly. You will be well repaid for your visit. If you prefer, write direct to us about the engines you are most interested in and we will promptly send you catalogues and any special information you request.

**INTERNATIONAL HARVESTER COMPANY OF AMERICA**

(Incorporated)

CHICAGO U S A



## THE I-H-C LINE

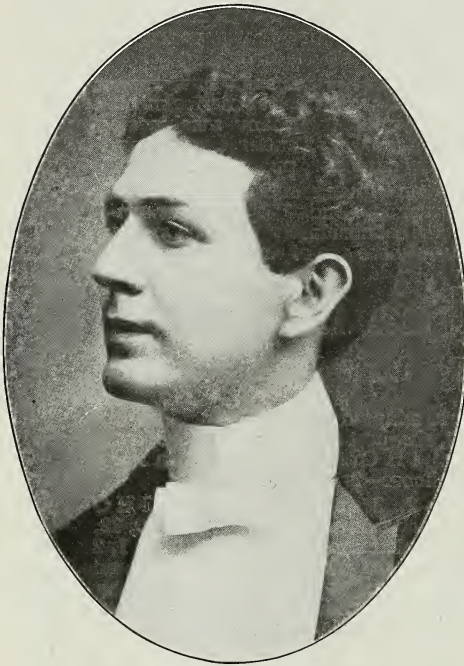
LOOK FOR THE I. H. C. TRADE MARK. IT IS A SEAL OF EXCELLENCE AND A GUARANTEE OF QUALITY

SEASON 1910-1911

*To Those Who Neglected to Learn to Dance:*

# Prof. W. J. Rader's Academies of Dancing

Will organize beginners' classes in the New Year as follows



## Winter Pavilion

Located on Neil Ave., between Goodale St. and Poplar Ave. Open Tuesday, Friday and Saturday evenings.

Operated on Summer plan.

## High St. Academy

199½ S. HIGH ST.

Phones: Auto 3456; Bell 5877

Will organize a beginners' class Wednesday evening, Jan. 4th, 7:30 o'clock.

## Neil Ave. Academy

647 NEIL AVE.

Phones: Auto 4431; Bell 6189

Will organize a beginners' class Friday evening, Jan. 6th, 7:30 o'clock.

## Oak St. Academy

827 OAK ST.

Phones: Auto 4431; Bell 6189

The Academy has been rearranged for functions of all sizes and is complete in every respect.

## TUITION.

Gentlemen, per term of 10 lessons. \$5.00  
Ladies, per term of 10 lessons... 3.00  
Private lessons, \$1.00 per lesson;  
six lessons ..... 5.00

Private lessons can be had afternoons or evenings.

Tuition can be paid \$1.00 per week until paid. The Waltz, Two-Step, Three-Step, Columbus Minuet and Rye Waltz taught in one term.

*Academies and Pavilion can be secured for private parties, club dances, Fraternity hops, etc.*

# Winter Course in Agriculture and Ohio Dairy Course

Begin January 2 and End February 24, 1911

---



Students and Instructors in a Winter Course.

---

THEY ARE COURSES FOR PRACTICAL FARMERS. TAKE THE COURSE THIS WINTER AND YOU WILL FIND IT THE MOST PROFITABLE INVESTMENT YOU EVER MADE AND THE BEST WINTER YOU EVER SPENT.

SEND FOR BULLETINS DESCRIBING THE WINTER COURSE IN AGRICULTURE AND THE DAIRY SCHOOL TO DEAN H. C. PRICE, OHIO STATE UNIVERSITY, COLUMBUS, OHIO.



# Are You Thinking of Buying FEEDING CATTLE or SHEEP?

Let us help you find what you want. That's one side, and a very important side, of our business.

It is handled entirely distinct from the selling side. We have expert buyers who do nothing else but fill orders for feeding cattle and sheep.

They are on the market every day, and know what, when, and where to buy. They will get you better stock for less money. You don't need to come to market yourself. Thus you save railroad fare, hotel bills and loss of time.

Ask your neighbors for whom we have bought feeders. They will tell you that we have saved them money and selected the right kind of stock for profitable feeding. There's a lot in that.

Write us NOW what you want. We will fill your order RIGHT or not at all. We MUST please you. Our business depends upon it.

Call upon us freely for any information. Write us at any of our ten houses.

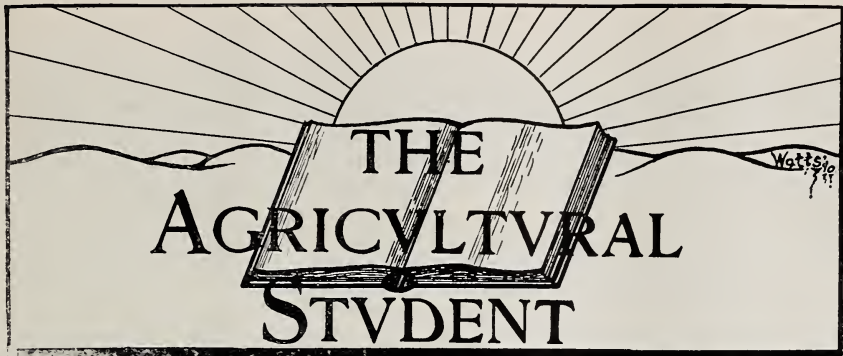
## Clay, Robinson & Co.

### LIVE STOCK COMMISSION

CHICAGO	SOUTH OMAHA	KANSAS CITY	SIoux CITY
DENVER	EAST ST. LOUIS	SOUTH ST. PAUL	
SOUTH ST. JOSEPH		EAST BUFFALO	
FORT WORTH			

Please mention THE AGRICULTURAL STUDENT to advertisers.

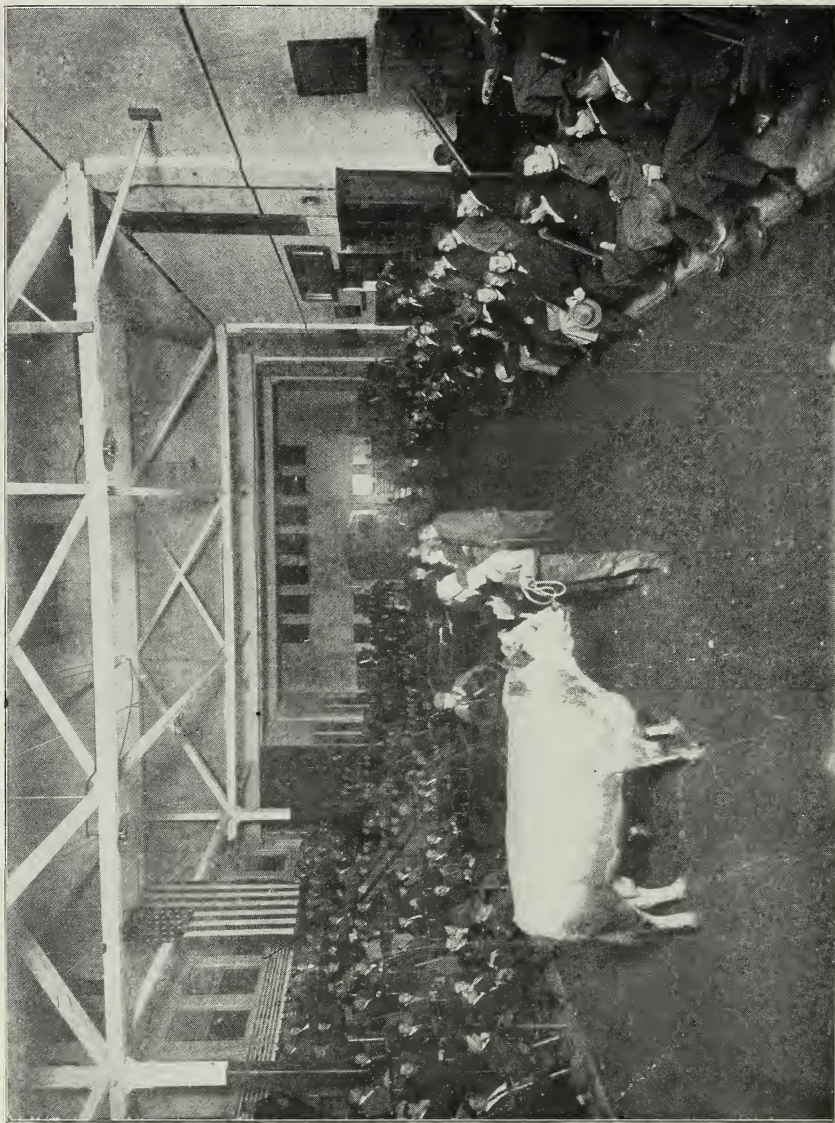




*Contents*

A CAMPUS SCENE.....	Cover
FRONTISPIECE.....	Page.
A PLEA FOR ORNAMENTAL PLANT- ING—	
By Prof. Alfred Vivian .....	7
HORTICULTURAL CONDITIONS ON THE PACIFIC COAST—	
By W. G. Yeager, '08.....	13
ORIGIN AND DEVELOPMENT OF HOLSTEIN-FRIESIANS—	
By Abraham Williams .....	14
COUNTY EXPERIMENT FARMS.....	16
SYSTEM OF CROP ROTATIONS—	
By H. J. Bower .....	19
A GLANCE AT THE INTERNA- TIONAL—	
By "Ye Twin Associates" .....	21
FORMS FOR CONCRETE .....	24
EDITORIAL .....	26
ALUMNI NOTES .....	28
NEWS NOTES .....	29





Scene at O. S. U. Live Stock Exhibit —Judging Pavilion.

—Photo by Dobbs.



# THE AGRICULTURAL STUDENT

---

Vol. XVII.    OHIO STATE UNIVERSITY, COLUMBUS, DECEMBER, 1910    Number 4

---

## A Plea for Ornamental Planting

By Prof. Alfred Vivian

Not long since when passing a book store my attention was attracted to a book which bore the alluring title, "The Gold Mine in the Front Yard." As half suspected, the book proved to be an argument in favor of beautifying the home surroundings by the use of trees, shrubs and flowers. The book, though crudely written, contains sufficient good sense and sentiment to give one moments of serious thought, when he reflects upon the utter bareness of the surroundings of the average American home of today. The author advances three principal arguments in favor of attractive planting. First, the increased value of the premises arising from such improvement; second, the comfort of the occupants of the home, due to the restful shade during the heat of Summer; and third, the influence that beautiful surroundings may exert upon the minds of children, as they unconsciously develop in the child's mind the love of home and of the beautiful in nature.

The first argument is the least important and yet it is a valid one. A certain farm in Ohio teaches a pointed lesson in this connection. The house surroundings were untidy, and the owner, wishing to sell, could not dispose of the property until a man happened along who could see the possibilities of the place, and bought it at a low figure. He spent two hundred dollars in painting the

house, painting and repairing the front fence, and in trimming the trees and tidying up generally. Within six weeks he again sold the farm for sixteen hundred dollars more than he paid for it. He had not added one whit to the crop producing power of that farm, and yet the second purchaser gladly paid a good price for a farm which had gone begging only a few weeks before.

The third argument, however, is unquestionably of the greatest importance. I recently took a somewhat extended trip over a part of Ohio which was once covered with beautiful forest trees. At this time there was scarcely a tree to be seen, and we passed house after house built on the severest type (like great dry goods boxes) and set down in a confusion of unkempt out-buildings, with not a single tree or shrub in the yard. I have before me a program of a Farmers' Institute recently held in this locality and one of the subjects thereon is the following: "Why Do Our Boys and Girls Leave the Farm?" Now, of course, there are many different reasons for the children leaving the farm, for one goes for one reason and another for a second reason, but I am strongly of the conviction that nothing will do more to make them happy and contented on the farm, than to make the old home a beauty spot of which they may be proud. Every child has within

him the latent love of the beautiful which may be developed in such a way as to make it one of the most powerful influences for good. The cultivation of this love of the beautiful should be a part of the education of every child, and there is no place where this part of the child's education can be so effectively given as at home. It is the duty of parents to surround their growing children with things of beauty, and to appeal more often to this instinctive love of the

considers the possibilities of the country house yard, he can but be amazed that so little is made of it on the average farm, especially when he contrasts this average house lot with those evolved by a few men who have risen above the mere desire for gain, and have realized that there are things in this world worth even more than dollars and cents.

When one talks to a group of farmers about the planting of trees, shrubbery and flowers to beautify the home he al-



A Farm Home Recently Planted with Trees and Shrubs.

beautiful, and less often to the sordid desire for gain. The home should be made as attractive as possible, and should be made to appeal to the affections of the child, for love of home is the redeeming virtue which has saved many a man from moral destruction.

Many of our farm homes fall woefully short in attractiveness, especially in the house-yard. One can find a good many houses which are more or less attractive inside, but which are set down among the most unattractive surroundings. My plea is for a beautiful house lot in addition to an attractive house. When one

ways meets these two objections from some of his audience, first, "we do not have the time to do these things," and second, "we do not have the money to spend." The truth is that a place can be beautifully planted, and cared for, without much expenditure either of time or money, if one only goes about it in the right way. The secret is to select those things which call for practically no attention after they are once planted. That means to do all the planting with hardy trees, shrubs and herbaceous perennials. Fortunately those plants which are perfectly hardy are



the ones which give the best possible effects for country planting, and, fortunately again, they are also those which are least expensive to buy. It is not worth while in these days, when we know so many beautiful things which are hardy, to bother with any plant which needs coddling to keep it alive. In many cases it is not necessary to buy plants at all, for many beautiful shrubs are native to Ohio and can be found in the neighboring woods. One of the pret-

and find that there has not been more than ten hours' labor a year spent on the shrubs since they were planted. The grass on the lawn takes much more time and care than the shrubbery.

How shall we plant? I am not a landscape artist, so am no authority, but a few things are so obvious that they are practically axiomatic, and to that extent any one who loves Nature and Nature's plants can be an authority. Any one can appreciate the fact that the



The Same Farm Home Ten Years Later.

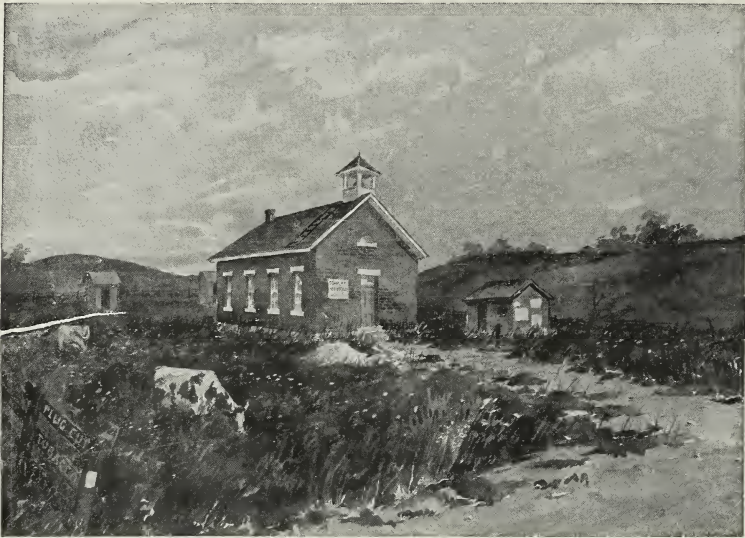
tiest yards in Columbus is that owned by Professor Lazenby, which is planted exclusively with native trees and shrubbery. This kind of planting has the added interest that each plant is a constant reminder to the owner of a pleasant walk and of the benign influence of the woods.

The amount of labor needed to care for shrubbery after the first planting is surprisingly small. I have in my own yard something over two hundred hardy shrubs, and have kept account of the actual time spent in caring for them,

planting should be done in accordance with a well conceived and matured plan. Nothing worth while is ever accomplished by haphazard methods. One of the easiest ways for the amateur to make his plan is to take a large piece of cross ruled paper and let each small square represent one square foot. Lay out the lot on this paper, place the house in its proper position, and you are ready to begin locating the trees and shrubbery. Almost any good catalogue will tell you the space which will be occupied by the different plants when ful-

ly grown, so one can tell how close to plant to get masses of shrubbery and yet allow each plant room to develop

wife's work basket is likely to bring to light different sizes of buttons which will correspond to these circles on the



Why should the school yard be neglected? Such a school yard will strangle any love of the beautiful which the child may possess.



The same yard, well planted, will become the pride of the community and will play an important part in the education of the child.

properly. The various shrubs will cover circles of from two to five or six feet in diameter. An examination of the house-

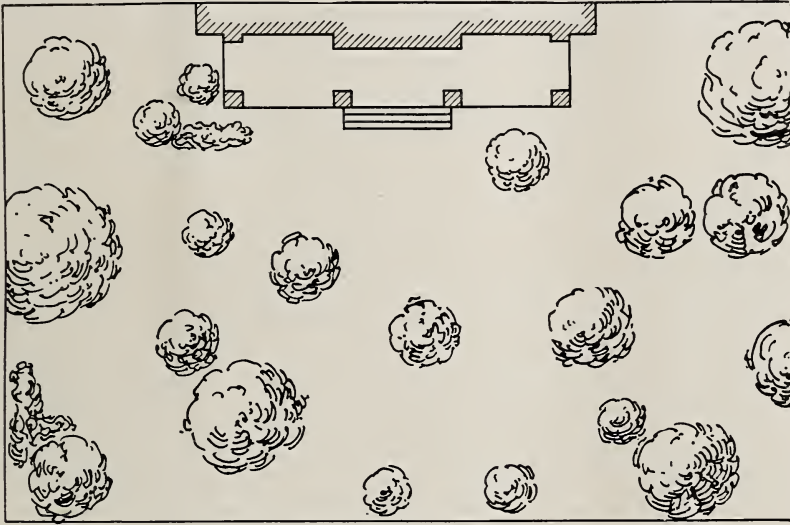
scale of your ground plan. By using these buttons one can arrange the shrubs in groups with no uncertainty what-



ever as to the number required to produce the desired effect.

Some one has said, "the completed planting should represent a framed picture. The house is the picture, the lawn is the canvas, and the trees and shrubbery represent the frame." Perhaps this is somewhat imaginative, but it presents the principal points of correct planting, i. e., the house in the center surrounded by an open expanse of lawn, and all the

objectionable in the unrestricted view, and these undesirable objects can be effectually blotted out by proper planting. If one will stand on the front porch, having an assistant with a long board or stick, pass along the edge of the lot, he can easily see where groups of trees and shrubs should be placed to shut out the undesirable view, and yet preserve the beauties of the landscape.



The common or nursery style of planting. The space in front of the house should be open lawn.

plantings on the border. Large lawns call for a few well placed trees, but it is a pity to spoil a beautiful lawn with heart-shaped beds of geraniums or foliage plants.

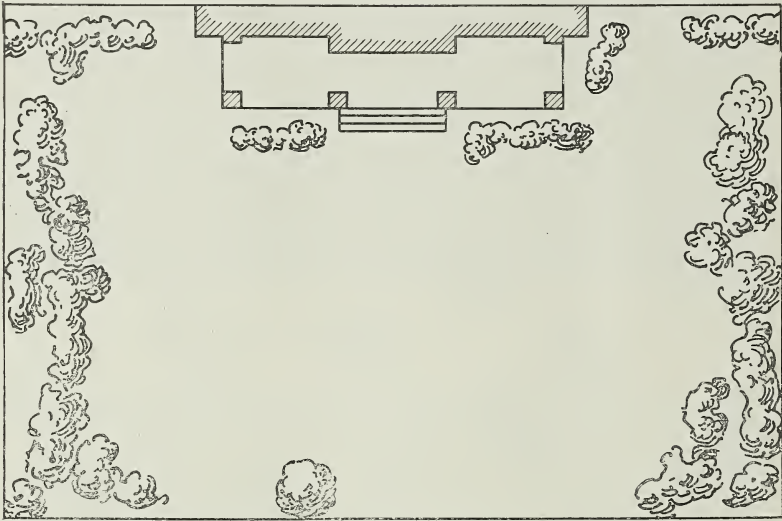
The above rule is sufficient for city planting, but in the country other important factors must be considered. There are always beautiful things in the natural landscape, and all these must be preserved. It would be a great mistake so to plant as to shut out a view of a picturesque ravine, or a pretty bit of the original forest. On the other hand, there is just as likely to be something

Another important consideration is that the planting should bear some proportion to the natural view. In a small city lot a single shrub is sometimes permissible, but country planting demands large masses. A better effect will be obtained with a smaller number of varieties and large groups of each, than with great variety but not enough of one kind to make a showing; and the former kind of planting is much less expensive.

A last word about the expense of this kind of planting in case all the plants must be purchased. One can make a

few dollars go a long way by buying small plants (yearlings) and buying a number of each kind. It takes longer to get the effect, but on the other hand the loss from dying is usually less with the smaller plants. Almost any farm house lot could be completely transformed with five dollars' worth of plants, and fifty dollars would make it a veritable paradise. It is not necessary to spend all the money at once, but

one can usually obtain prices much lower than those of the catalogue, especially if he specifies small plants. Above all do not buy from the traveling plant peddler. A few years ago a woman showed the writer a dozen tulip bulbs which she had bought from one of these agents for \$1.50, and was incredulous when he informed her that ten days before he had purchased one hundred of the same kind from a reliable firm for



A Well Planned Yard. The Main Plantings on the Border.

if you spend only one dollar, have your plan well matured and put every plant in its proper place in the general scheme. It would be best to purchase first the large varieties, which take longer to reach full size, adding the smaller from time to time as one can afford them. Make up the list of plants desired and submit to two or three responsible firms for bids. In this way

\$1.25. These agents often ask fifty cents for a single shrub when five to ten small plants of the same varieties can be obtained from the nurseries for the same amount.

And now this closing word from Professor Bailey: "The best planting, like the best painting and the best music, is possible only with the best and tenderest feeling, and the closest living with nature."



# Horticultural Conditions on the Pacific Coast

By W. G. Yeager, '08

After spending several months the past summer in the orchard districts of the Pacific Northwest, the writer will endeavor to collect a few of the observations made in the far famed fruit-growing areas of that interesting section. The topography is peculiarly adapted to the requirements of the apple and other fruits.

The arable area adapted to orchards is quite limited and confined largely to the valleys and fruit series of uplands.

The valleys are bordered with high mountains, well timbered and supplying an abundance of water throughout the growing season. The writer entered the section through Southern Oregon, through which runs the Rogue river valley. This in many respects furnishes the ideal conditions for commercial orcharding. The valley lies between the Siskeyon Mountains on the south and Unipqua Divide on the north, with an area of over 500,000 acres of tillable land. The altitude, soil, water and climate are exactly right to supply the requirements that go to produce strictly fancy apples. The writer visited orchards in the southern end of the valley that would pick one thousand boxes of apples per acre, and fruit of a color and lustre that is unsurpassable. Yellow Newtown, Pippins and Spitzenberg are the commercial varieties. Single trees have yielded 57 boxes of marketable apples in one season.

A little farther north in the valley, cherries and pears occupy an important place in the products of the region. The trees are wonderfully prolific, in fact the quantity and quality of the fruit was astonishing. Cherry trees so loaded down with fruit that at the very low price of three cents per quart on the

tree, the returns averaged over \$1000 per acre.

It would be an injustice to overlook Roseburg, Oregon, in these rambling remarks. The writer never saw anything equal to the roses of this place, even in the famous rose gardens of Los Angeles, California. The sight was truly marvelous and beyond description. Susherlin Valley, Oregon, not only widely advertised, offers some splendid natural advantages to the orchardist, florist and home maker.

The Williametta Valley, the early home of the pioneer and later famous for its wheat farms, has been transformed into a grand net work of fruit, dairy and truck farms; where ten acres carefully farmed provides a good living for a man.

The various valleys that lead into the great Columbia River basin are becoming famous for their particular type of apples and other fruits. The name of Hood River is known by every important fruit house in England.

The western grown fruit of our eastern varieties, especially apples, do not have the high flavor of the eastern grown fruits, although the appearance is improved by the Pacific Coast air and sunshine.

Fruit growing in the Pacific Northwest is a profession and a well learned one at that, while in the East it is usually a side line and does not receive the consideration that is due it. Everything that goes to make perfect fruit in the way of cultivation, fertilization, spraying, etc., is provided. When it comes to picking and packing, a routine of inspection is set up that would do justice to a manufacturer of scientific instruments. Eggs in an eastern poul-

try establishment are not handled with any more care than the fruit of the Pacific Coast commercial orchard, and the result is a product that is "extra fancy" and brings a price that justifies the attention given.

The scenery in the Oregon country is grand. The rugged snow-capped mountains, with the deep intervening valleys, present a net work of landscape that is pleasing to the eye. The water courses present an endless panorama of scenery, pleasure, and are unlimited sources of power.

The fruit grower is prosperous and happy, presenting the ideal American

home life. Considerable land available for orcharding is still open for settlement through the various homestead acts. Fruit land in the rough can be purchased at a price varying from \$50 to \$200 per acre, according to the proximity to shipping points. A study of the horticultural conditions in the Pacific Northwest is a splendid training for the fruit man of the East. It illustrates the extent to which success depends upon producing a perfect fruit and putting it upon the market in the best possible condition, a lesson that is yet to be learned in many sections of the East.

---

## Origin and Development of Holstein-Friesians

By Abraham Williams

The early history of the Holstein-Friesian cattle is very meager, as no official records were ever kept until 1872, when an association for that purpose was organized in America. Three years later the North Holland Herdbook Association was formed, which still continues under that name. There are, however, some valuable sidelights thrown on the origin of the black and whites from the political and commercial history of the Dutch people.

It is certain that the ancestors of the race have had their home in and about the Netherlands for a very long period of time, for when the Romans controlled Friesland there were cattle there which strongly resembled the present day stock. The Romans materially aided in their development, in an indirect way, by the improvements which they brought about in draining and diking, thereby increasing the growth of the herbage, which is Holland's chief natural advantage. It is fortunate, indeed, that these people, with a territory no

larger than the State of Rhode Island, were not absorbed by the conflicts of war and commerce, but were allowed to continue cattle breeding practically unmolested for nearly two thousand years.

The spread of the Dutch cattle has been slow but persistent, gradually spreading out over Germany, Belgium and into Russia, where they formed the foundation of the Holmogarian stock, which is the predominating breed of cattle in Russia. It is only a matter of conjecture what effect they would have had on the cattle industry of England and the Channel Island had they not been excluded by stringent laws. As it was, according to Prof. Lowe, they were used to considerable extent in improving the Teeswater cattle, which were the foundation stock of the early Short-horns.

Holland has been noted for both the quality and quantity of her dairy products for nearly a thousand years. Along with this notoriety has come: descrip-

tions of the cattle, methods employed, and the excellent care that was given them. The constant attention and devotion toward their cattle has remained unchanged to the present time, the stock being housed under the same roof as the family with only a partition between the stable and living room. This loyal care has undoubtedly been the most important agent in the breed's progress.

The Holstein-Friesians were first brought to America by the Dutch when they settled New York at the beginning of the eighteenth century. While many importations have since been made and the stock spread to every state in the Union and to Canada, New York is still the great Holstein-Friesian center of America. However, the black and whites are rapidly advancing over the whole Mississippi valley because of their better adaptation to the fertile low land than to the high altitude of the mountainous regions, to the heat of the South, or severe weather of the greater part of Canada.

For some time cattle called Holsteins were imported from a province of that name in Germany, while those brought over from Holland were called Friesians, named from the province of Friesland in that country. As they were of the same breeding it was thought best by the importers to agree upon a common name, but instead of choosing Friesian, which is the most appropriate, the cumbersome combined name was chosen. Friesian is the only name used in their native land.

The breed has now reached a greater development in the United States than in Holland. All the noted records are being made by cows on this side of the Atlantic; furthermore, ancestry cannot be traced for more than one generation on the continent, and for these reasons importations have practically ceased. It

is the custom in Holland to sell cows to the butcher when six or seven years old, believing it to be better policy than keeping them until old age makes them unprofitable. Because of this dual purpose element, it is more easy to understand why the Holstein-Friesian has maintained its supremacy as the largest sized dairy breed. All of the cattle do not conform to the beefy type, as some carry much less flesh than others. American demand is said to have favored this latter type the most. In this country there is a strong tendency among breeders to establish a medium type which is neither extremely thin nor yet beefy.

The color of the Holstein-Friesian, while important in a general way, is not always black and white as is commonly supposed. There are several red and white herds of noted cattle in Holland, but the red markings are not popular here and such cattle were for some time barred from registration. A peculiar thing in connection with the general irregular marking is that black is very rarely found to come down to the hoof line in pure bred animals, the legs being white in almost every case.

Certain families within the breed, such as the Pietertje family, are noted for milk production, while certain other families, De Kol and Pauline Paul, for example, are better producers of butter fat.

The high pedestal to which the breed has risen through the records of such individuals as Missouri Chief Josephine, and Colantha 4th's Johanna, seems truly marvelous. Indeed, such records may well be envied, and when we look back for an explanation we find it to be due largely to the many years of steadfast attention toward a definite purpose, namely, the breeding of profitable cows by the people whose land is lower than the sea.



## County Experiment Farms---Selection and Equipment

The last General Assembly passed an act authorizing the establishment of county experiment farms, the object of these farms being "to demonstrate the practical application under local conditions of the results of the investigations of the Ohio Agricultural Experiment Station, and for the purpose of increasing the effectiveness of the agriculture in the various counties of the state."

The reason for the enactment of such a law is that the work of the Experiment Station has demonstrated the possibility of very greatly increasing the income of the farm, and of doing this by methods which leave a liberal margin of profit. For example, on the main farm in Wayne county the yield of wheat has been increased from less than 12 bushels per acre to 34 bushels, and that of corn from 30 to 80 bushels, at a cost which has been repaid several times over in the increase of crop. Similar results are being attained in the Station's orchards, and on its test farms in Cuyahoga, Montgomery and Meigs counties, although the work on these test farms is bringing out the fact, that soils of different geological origin, or which have been subjected to different systems of management, require different methods of treatment in order to produce the most economical results.

The outcome of the Station's work is published in its bulletins, but the printed page can never be so satisfactory a demonstration as the crop actually growing in the field; and it is manifestly impossible for any large number of farmers to see the crops in the Station's fields and orchards. The county experiment farms, therefore, will serve the purpose of extending the Experiment

Station to every county in the state which may establish such a farm, and thus of bringing its work within reach of every farmer in those counties.

### PLAN OF MANAGEMENT.

The law places the management of the county experiment farms in the State Experiment Station. This Station has been established by the State at a cost of a quarter of a million dollars, and the State and National governments are jointly expending more than half that sum annually in its support. The Station staff consists of men who have become experts in the various departments of science most closely related to agriculture, and who are provided with the most effective equipment for scientific research, in the way of laboratories and apparatus, that the world could furnish. It is manifestly impossible to maintain such a station in every county on an independent footing; but under the law the county experiment farms will become integral parts of the main station, and through them its great resources will be directed towards the solution of the local problems of each county in the state.

To successfully carry out such a scheme as this it is evident that the county farms must be under the absolute control of the main station, and such control is provided for in the law, although it also provides for consultation with persons representing the agriculture of the county, and in fact, gives such persons the power to determine the general policy of the county farm.

As a movement is on foot in several counties of the state to establish experiment farms under this law, the following suggestions are offered as to the



requirements of a county experiment farm.

**Area:** The law provides that the farm shall contain not less than 80 acres; the chief reason for this requirement being that there should be land enough to give constant employment throughout the year to at least one man and team, experience having shown that if the person in charge of experiment work must look elsewhere than to the Experiment Station for part of his living the Station's work will invariably suffer. Another reason is that there should be land enough to permit some extension of work as new questions come up. Moreover, 80 acres is the average size of the farms of the state, and it is often easier to secure a farm of this size on advantageous terms than a smaller one.

In some counties 80 acres will be entirely sufficient for such a farm, while in others it may be wiser to devote larger areas to its work. For example, 80 acres of land, all susceptible of plot work, might give greater opportunity for work than 500 acres of rugged hills and narrow valleys.

**Topography:** Flat land is not well suited to experimentation, because on such land there are always depressions in which water stands longer than elsewhere; but uniformity in the water supply is not less essential than uniformity of soil to the accuracy of a comparative test, hence the topography should be such that the water supply will be as uniformly distributed as possible.

On the other hand, steep hillsides are objectionable for field experiment, because of their liability to wash. The ideal topography for such work is a broad, gentle slope of one or two per cent.; but for orcharding and forestry, and for poultry or sheep husbandry, hill farms are well adapted.

**Quality of Soil:** It is generally desirable that the land be under, rather than above the average condition of the soil of the county in natural productiveness, for the reason that the improvement of impoverished land is one of the most important lines of work which the county experiment farm can undertake.

**Location:** The farm should be convenient of access. Where it can be located on an electric line the ideal situation will be attained. Only extraordinary fitness of a farm for this work will justify a location more than a mile from a railway station of some kind.

**Buildings and Equipment:** The buildings needed by the county experiment farm will be just those of the better class of farmsteads of the state; that is, there should be a comfortable dwelling house or not less than eight rooms, unless there are other facilities for obtaining board and lodging within easy reach, for it will be necessary for representatives of the various departments of the main Station to make frequent visits to the county farms to look after the different lines of work which will be conducted on them. There should also be a good barn with stabling for several horses, for one or two cows for the superintendent, and for a few feeding cattle or sheep, as the production, care and use of manure will be one of the leading features of the work of many of these farms. It may be well to conduct some of these county farms principally as dairy farms, where dairying is the chief local industry, or as sheep, poultry or fruit farms in the regions best adapted to these industries. Storage for implements and machinery will also be necessary.

All work involving the use of scientific laboratories and apparatus will be performed at the main Station.

The general equipment in tools, im-

plemtns and machinery will be such as is required for the conduct of a ordinary farm, with the addition of wagon and platform scales, and in most cases a small engine and thresher.

**Cost of Equipment:** The cost of land and buildings will vary in different counties. In some cases it will be possible to set aside for this purpose lands already owned by the counties; in others it may be necessary only to add a few acres to such lands. In some cases sufficient buildings will be secured with the land; in most cases some new buildings, or rearrangement of old buildings, will be needed. The cost of teams, implements and machinery for an 80-acre farm will average not far from \$2,500. In practically all cases some drainage will be necessary, and it will be conservative to estimate this item at not less than \$500 under the most favorable conditions. Ordinarily it will amount to twice that sum or more, for dependable results in field experiment cannot be secured on undrained land.

**Cost of Maintenance:** The law provides that the produce of the county experiment farms shall be used for its support, and that the County Commissioners may appropriate in addition not exceeding two thousand dollars annually for this purpose. Under ordinary circumstances an experiment farm cannot be self-supporting, for if an experiment is to furnish trustworthy results the weighing, measuring and record keeping will often cost more than the manual labor.

**What May Be Expected of the County Experiment Farms:** In the comparison of cereal varieties at the main station, ten varieties of wheat have exceeded the Mediterranean in average yield for the 12 years, 1898-1909, the excess of seven of these varieties being

from two to three bushels per acre. The average county in Ohio grows about 20,000 acres of wheat annually. An increase of one bushel per acre on this area for one season would purchase and equip an experiment farm. Some of the varieties grown at the Station are known to be unsuited to soils of a different character, and others which have acquired an excellent reputation in other regions have not done as well as the Mediterranean here. Local comparisons are therefore the only safe guide, and unless there comparisons are made under exact methods they may be altogether misleading. Corn is still more subject to the influence of local conditions than wheat.

As has been stated above, the Station's investigations on soil fertility have demonstrated the possibility of more than doubling the present yields of corn and wheat in Wayne county. This work has reached its culmination after years of groping in the dark, for field experiment was an undeveloped form of research when it was begun 18 years ago. Two points, however, have been definitely worked out during these 18 years: The first is, that field experiment is the only method upon which a rational farm practice can be established, and the other is that this form of research requires years of work under the most exact methods before trustworthy results can be attained. A single season's work in the field may be altogether misleading; it is only when the work has been carried through a cycle of our ever changing seasons that we can be sure of the lesson taught.

The county experiment farm, therefore, is indispensable to the advancement of our agriculture, but it must have years for its work before its results can be definitely accepted.

## System of Crop Rotations

By H. J. Bower

The benefits of rotation in crop production has long been recognized, and various systems have been practiced. The reasons for such benefits, and the best systems to be followed have been studied only within recent years. Many of the experiment stations are carrying on work along this line. As it takes some time to obtain definite results, the greater amount of the work done has not yet been reported. The main objects to be attained in a system of rotation are the maintainance of fertility, with the continued production of crops, and the increase in productiveness of naturally worn out soils.

The principal reasons for crop rotations are as follows: All plants do not draw to an equal extent upon the plant foods of the soil. They send their roots to different depths, and have a different solvent action upon the constituents they reach. By rotating crops insect enemies are more apt to be dispersed. Fungous diseases may also be materially be reduced. The soil is maintained in good tilth, and bacteria, which are beneficial to the plants, are more likely to be increased. Weeds are more readily eliminated, compounds of the soil increased, and the work of the farm more evenly distributed.

**Systems of crop rotation:** When maintained from the farm management standpoint are governed, by the different soils, different systems of farming, and the circumstances that surround the soil, as climate, distance from market, the cost of labor, the ease or difficulty with which manure can be procured, and the amount of capital under control by the farmer.

The idea of an improved system of

rotation is to get from the land in a given time, as many merchantable products as can possibly be obtained by judicious expenditure of labor and capital. The farmer must plan to use his machinery to the best advantage, and by machinery the American farmer is enabled to expend his labor to a great advantage. There is small profit in growing a crop, unless the other crops of the farm and the farm work have been adjusted to the particular line of business. For a crop to be profitable, it must be only in those cases where the getting of it and the use of it does not conflict with the genral plan of the farm, and with the utilization of unmerchantable products that are obtained upon the farm.

The different kinds of soil also have an important effect, as for clay soils the most profitable rotation would be meadow grass, corn, oats, wheat, corn-peas and soy beans; light soils, pasture, grasses, clover, wheat and barley; loam soils, wheat, corn, oats, barley, grasses, peas, beans, alfalfa and clover. Of course no exact system can be stated as to these soils. Adherence to a good rotation manages a farm with regularity and ease, but a slavish adherence to any rotation evinces want of good judgment. The judgment ought to be exercised as to the condition of the land, and the character of the season. Any modification will profit both soil and occupier. For a general system a rotation should be so planned as to secure the same amount of forage to feed each year, and of grain and stock to sell.

The essential principles involved in a good rotation are as follows:



First, have one leguminous crop.

Second, have one cultivated crop.

Third, have a growing crop continuous on leachy soils.

Fourth, rotate shallow root crops with deep, but try to avoid bare summer fallowing and rotating small cereals with other small cereals, and always keep stock on the farm. Apply all the manure made, which can be applied to best advantage on rank growing crops as corn, and plowed under.

The kind of farming also governs the system of rotation, as for a hay farm the rotation would have to be a rotation suitable to that farm. A grain farm would require another system, a live stock farm another, and a dairy farm another.

A hay farm is not a very profitable farm, neither is a grain farm. The two must be combined in order to maintain soil fertility, and at the same time to make the greatest profit in farming. A profitable and scientific rotation would be about one-third corn, one-third small grains, and one-third grasses consisting of meadow and pasture.

For a live stock farm a similar rotation may be used, except perhaps with a larger percentage of grasses, as one-fourth corn, one-fourth small grains, and one-half grasses. The rotation on a stock farm cannot be a fixed rotation. Fixed rotations are, however, necessary on certain types of stock farms, where one or more of the crops are used for pasture, and where the fields must be separately fenced. A single fixed rotation practically never produces crops in the needed proportion on a stock farm.

Fixed rotations are not so objectionable on farms that grow crops for sale. Provided, of course, the crops are such that bring satisfactory profits and

proper measures are taken to maintain the fertility of the land.

A dairy farm requires an entirely different rotation system from a mixed grain farm, but similar to a live stock farm. On a dairy farm the ordinary succession of crops is replaced by a soiling system. Soiling crops consist of rye, wheat, barley, oats, alfalfa, corn, kaffir corn, cane, millet, clovers, cowpeas and soybeans. It is impossible to give rotations that are likely to be most successful for all conditions as climate, season and adaptability of crop. In order that the largest returns may be obtained, a continuous supply of forage must be provided, so as to adopt systems of rotation that will result in the largest yield of food per acre. In laying out the farm it is necessary to know how many animals we wish to soil. It is always best to make a liberal allowance. There is no need of any waste, since any amount may be cut and cured for winter forage, or plowed under as green manure.

On dairy farms where grass is a staple crop, the plan of rotation need not be adhered to so strictly as on arable farms, for the horse and hand labor of the dairy may be concentrated on occasion upon the limited area of ploughed land. While on an arable farm any small irregularity in the system of cropping might interfere with the proper adjustment of labor.

The local circumstances that effect the different systems of crop rotation need not be considered here, except the influence of capital on the practice of rotations. The rigid courses are commonly practiced by well-to-do people, situated on fairly good land, and possessing cattle enough to yield a proper supply of manure, as well as power to hire adequate supply of laborers. The



man who has not the capital is not able to have the equipment necessary to handle the different crops that would be required in a good system of crop rotation. This is the reason for so much straight grain farming in different states. The man without circulating capital will have to begin and work up

gradually to a good system of crop rotation as his circulating capital increases.

In each kind of farming, the farmer's best teacher is his experience. The exercise of his judgment as to the conditions and modifications, and what local circumstances demand, will profit both soil and occupier.

---

## A Glance at the International

By "Ye Twin Associates"

It was a brisk and chilly Saturday morning when we showed our passes and entered the portals of the greatest stock shows the world has ever seen, the behemoth 1910 International, greatest in numbers and greatest in quality.

The finale of the American show circuit draws hither the champions of the state fairs to compete one with another, so here we may expect to see absolutely the very best that American animal husbandryman have to show us. The flocks and herds and studs of England, and Scotland and France and Belgium, too, have been searched for their best and most perfect examples of animal form, all assembled here for our perusal and edification. Let us then make the most of our unexcelled opportunity and see what the show has to offer us.

Indeed we must "be up and doing" every minute, if we are to see it all, for here, presented for our approval, are, of cattle 1194 individuals, with 1191 horses, 1163 sheep, and 807 hogs, all exclusive of the 119 carload lots of cattle, sheep and swine out in the yards, making a total increase of more than 25 per cent. over the numbers entered in last year's magnificent show.

The Students' Judging Contest is today the cynosure of all eyes, the chief topic of conversation. We watch them

out there in the huge arena, here a group working on the horses, there another busily engaged with a knotty (and naughty) problem of Hampshire type, with still another squad across the way busy with the Heresford bulls. Out the gate and down the passageway we see the fourth group trotting off to the swine pavilion, there to settle the swine judging proposition. Some work like seasoned veterans, all show grim determination to win and carry back the trophy to their beloved Alma Mater. Nine of our leading agricultural colleges are represented, each with a team of five members. Here they are, forty-five magnanimous young men, representative of the future leaders in our live stock husbandry. It was indeed quite a surprise to some to see the former champions of the Hawkeye State forced to content themselves with third place, thereby releasing their bulldog hold on the coveted trophy. New championship timber was uncovered in Missouri, with the first four high men in the contest, and an unequaled record of first in horses, swine and cattle judging, and a very close second to Texas in sheep judging, thereby capturing four of the Armour scholarships. The Ohio team, while scoring a higher number of points than did the winning team of last year,

were, in comparison with the higher standing teams of this year, under a serious handicap due to lack of experience. However, a rational analysis of the result redounds only to the credit of Ohio's team.

The beef cattle came forth in magnificent array in both breeding and fat divisions. The Shorthorns, Angus, Herefords, Galloways, Red Polls, and Polled Durhams, they were all there, with the leading herdsmen and fitters of the country vieing one with another for possession of the lion's share of the coveted blue ribbons. Much interest attached to the Shorthorn show, and here no breeder was more prominent in the winnings than Thos. Johnson. It was with unmitigated delight and joy that we saw our neighbor, friend and benefactor bring forth not only the winning aged herd, but also the first prize calf herd, and the winning produce of cow, besides furnishing all three of the contestants for the female junior championship honors. Also, Mr. Johnson's "Roan Sultan" gave "Ringmaster" the fight of his life for the crown of grand champion Shorthorn bull. He, too, is of double interest to us Buckeyes, for he is owned by A. S. White, of Cincinnati, and Leslie Smith, of St. Cloud, Minn.

Carpenter & Ross, of Mansfield, Ohio, came in for their usual big share of the winnings, while Rosenberg & Edwards, Tiffin, O., uncovered the first prize aged cow. A glance at the list of exhibitors of the "red, white and roans" proves Ohio to be in the very front in the breeding of this "farmer's beast."

The nobby, black "doddies" made a marvelous show. It was here that Bradfute & Son, Cedarville, O., furnished the champion bull in the sensational "Eastern Star of Meadowbrook." By a close study of the winners, here, one

could gain many a valuable point on ideal beef conformation.

"The "white faces" made a very attractive show, especially in the younger classes. Each year the shaggy Galloways and the other breeds come forth in increasing numbers.

The grand champion bullock, "Shamrock II," was a radical departure from the standard of previous years. He was a grade Angus of Hawkeye extraction, and won his premier on account of his remarkable weight for age, 1100 lbs. at 10 months. In finish and covering he did not compare with his older rival, a pure-bred Shorthorn from Canada. The Irish judge, Mr. Carden, approached his task from the feeder's standpoint at all times. No other judge in the International arena has ever shown so much interest in the legend displayed on the exhibitor's entry card. McCoy & Son, Washington C. H., O., were very prominent among the steer classes. No explanations were furnished as to why our "Master Strathallan" did not top his class over the larger but coarser and less thickly fleshed Kansas entry.

The ovine display beggars descriptive phrases. The Shropshire show, as usual, was largest and the center of the most interest. The Hampshires, too, are making an ever increasing bid for popularity among American flock masters. The "nuggety" Southdowns again furnished the grand champion wether of the show. Each year sees all the more important breeds represented with increasing numbers. As usual, Ohio breeders came in for their large share of the ribbons. The Ohio State University flocks benefited most materially by ovine purchases made at the Exposition. The winning pen of Southdown wether lambs and two others from the Huntleywood flock now bear the "Wahoo" stamp. In the bunch was the first prize

lamb, a mutton type par excellence, and the nearest approach to ideal mutton form that has as yet honored the Ohio College tanbark. A most valuable acquisition, also, are the two Wardwell Shropshire ewes, one a champion at several state fairs, the other a most worthy flock-mate to her.

The swine show was of excellent quality, though the number of entries might well be increased. But the best of the several breed were there, and this feature constituted an exhibitoin in itself. The grand champion barrow was a Buckeye product, brought forth by the Sheffield Farm, of Glendale, O.

The show of drafters was larger by far and exhibited a much igher average quality than did that of any previous year. Very good horses were forced to leave the ring without ribbons. All the breeds were well represented, Canadian Clydesdale and Shire breeders making the competition very warm.

The Percherons and French Draft horses had never before exhibited such strength in an American arena. Nearly 100 two-year-old stallions presented the most difficult problem which any American judges had hitherto been called upon to face. This makes the honor which the winner achieved an unequaled one. He was found in the stud of McLaughlin Bros., and bears the name of "Intime." When it came to championship he was forced to take reserve to the older one, "Helix." Not long were the judges in finding the champion mare n the wonderful "Iolanthé," American-bred, the property of McMillian & Son, sired by the great "Calyso," a former champion, with a breeding record second to none. This mare represented the ideal farmer's type, smoothly-turned, sensational in character, legs, feet, bone, a marvleous goer, besides being an ideal mother, for

she raised two colts this very year, and yet none dared dispute her bloom or her positon. At the evening exhibitions the famous stallion, "Pink," twice a champion here, "made 'em all sit up and take notice," so proud and conscious was he of his laurels, so sensational in his action, while we all did homage.

The other breeds were out in wonderful strength, and one could have spent all his time among them. Something new to America were the Suffolk Punches, an English breed, supposed to be an ideal farm horse, the chief exhibitor being Anna Deans Farm, of Barberton, O.

At night came the entertainment features. The ring side was crowded with the gay hosts of society. Many of these evening performances were highly educational as well as entertaining. The parades of the prize winning cattle and horses, and their evolutions in the ring, presented a panorama of beauty, unequaled elsewhere in the world.

The six horse teams, as usual, drew forth enthusiasm and mighty applause.

Thus reads a page from the 1910 International. Volumes could be written on this Exposition and its influence. The International is a permanent instituton in American agriculture; far reaching and unparalleled are its lessons. No wide-awake, up-to-date stockman or student can afford to miss it. Still greater achievements in American agriculture lie before us, and with them will come ever greater Internationals. Let us be up and reap some of its benefits. No other investment of time and money yields greater dividends. We come away filled with unquenchable enthusiasm and anxious to be identified with such movements as these—movements for the uplift and betterment of our agriculture, our flocks, and our rural institutions.



## Forms for Concrete---Schemes for Saving Time, Labor and Lumber

Since freshly mixed concrete is a plastic material, forms of some kind are necessary to hold it in place and in shape until the cement sets up and the concrete becomes hard. Lumber, though expensive, is the material most commonly used. By exercising his natural ingenuity and customary care in the matter of construction of forms, the farmer has built so cheaply of concrete that his cost statements are frequently doubted by the builder in the city.

Much of the work done on the farm requires almost no forms at all. In this class are walks, floors in buildings, and feeding floors.

### FORMS MUST BE TIGHT.

The first requisite of good forms is that they should be tight, so that the liquid cement may not run out between the cracks, cause pockets or hollows and thus ruin the looks of the work as well as decrease its strength. Consequently straight boards are most desirable unless one chooses to fill gaping cracks with stiff clay and tack strips over them. Dressed lumber is usually straightest and yields a neater finish to the concrete. But for ordinary purposes rough lumber is sufficiently good. Naturally the siding must be stiff enough not to bulge out of shape when the forms are first filled with concrete. This does not mean that very heavy siding is necessary. In fact, one-inch boards are usually sufficiently strong. The bulging may be prevented by setting two by four-inch studding from 20 to 30 inches apart according to the thickness of siding boards or sheathing used.

### THE PRIMARY PRINCIPLE—SAVE LUMBER.

The thoughtless cutting of boards in-

to short lengths means a waste of lumber and a useless increase in the cost of concrete. Unnecessary nailing not only calls for more nails but adds to the difficulty of removing and the danger of splitting and ruining the boards. The reason that concrete is so unusually cheap for the farmer is that he plans his forms to spoil as little lumber as possible and he finds a use for all of the lumber after it has served to hold the concrete in place. In this way the material for forms costs practically nothing.

### LITTLE SAVING DEVICES.

Most concrete work on the farm is built in what is known as the "box form," which, with variations, consists of one box within another between which the concrete walls are molded. Such forms are used especially for walls of buildings, tanks and troughs. Ordinarily the studding need not be cut in lengths equal to the height of the wall; it may without inconvenience be allowed to project above the top of the siding. Nor does it need to be sharpened (and later battered up at the other end) for driving into the ground. There is a quicker, easier and cheaper way. Set the ends of the studding on the ground and hold them in their proper position by a timber, called a "liner," lying on the ground against them; or "toe-nail" the ends of the studding to a plate which will serve the same purpose. Stakes driven into the ground and against the plates or liners will fix them firmly in place. The studding may be held plumb by bracing it with odds and ends running from the top to stakes driven into the ground a few feet away from the form. If the forms are so high and will be filled so rapidly as

to render possible the springing of the studding, tie the opposite pieces together by means of bailing or other pliable wire passed through the joints in the siding. Space the forms at the top by means of cross cleats.

For the outside wall of box forms boards of full length need not be cut at all. The extra length may be allowed to extend beyond the corners. This saving cannot always be effected with the inner wall, yet odd pieces of boards may often be used in such a way as to prevent useless cutting. In nailing on the siding, arrange the boards so that all end joints will not be made on the same upright. If the lumber is crooked, draw the boards together so as to prevent cracks. Since the siding is generally between the studding and the concrete, heavy nailing is not needed to hold it in place until the concrete comes against it. Often cleats, clamps, or screws are used to save the lumber and render easier the removal of the forms. The forms should always be planned with this end in view. In placing the concrete avoid unnecessary lifting by leaving off a few of the boards at the top of the form until they are needed. However, if chips or blocks fall inside the forms, carefully remove them before proceeding with the work.

See that the forms are lined up properly before beginning to fill them as they must not be disturbed after the concrete is in place.

#### HOW TO CLEAN FORMS FOR CONCRETE.

If new forms are wet, before the concrete is placed, and allowed to remain in position until it has thoroughly set, bits of concrete will seldom stick to them. For very particular work, or where forms are to be used more than once, it is advisable to coat them, previous to erection, with soft soap or oil.

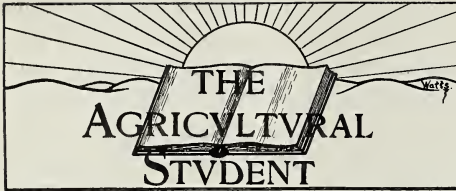
Linseed, black or cylinder oil is suitable, but kerosene is not good. Upon taking down the forms immediately clean off all bits of concrete clinging to them. For this purpose a short-handled hoe is convenient, but it must be used with care so as not to gouge the wood.

#### THE PLACING AND PROTECTION OF CONCRETE.

All other things being equal, the strength of concrete is dependent upon its density or compactness. Where possible, the easiest way to render concrete dense is by mixing and placing it wet. For very wet concrete the forms must be tight so that the liquid cement cannot escape. To give a neat finish to the surfaces, which will later be exposed, force the larger stones back from the outside by running a straight spade or a wooden paddle down in the concrete next to the wall forms and working it back and forth.

It frequently happens that very wet concrete cannot be used. To make a drier mix dense and strong, tamp or ram it into place with a heavy wooden or iron tamper.

In a way, the successful making of hay and concrete are very much alike—both must be well cured. Exposed surfaces of freshly placed concrete should be shaded to protect them from rain, dust and the hot rays of the sun. Freezing injures freshly placed concrete. Hot water and salt are sometimes used to counter-act the frost action; but, on the whole, it is better to attempt no outside work in winter. During the early months of spring and fall see that no frozen sand, gravel or rock is used in the work. In summer ordinary forms, for walls supporting no loads, may be removed after the concrete is 3 days old, but in cooler weather they should not be touched short of 5 days.



**A Monthly Magazine Devoted to the Interests  
of Farming, Stock-Raising, Dairying  
and Creamery Work.**

Published by the Agricultural Student  
Pub. Co. in connection with the Agricultural  
College of Ohio State University.

#### EDITORIAL STAFF

H. M. Call, '11 .....	Editor-in-Chief
E. R. Hurst, '11 .....	Business Manager
G. G. Hayes, '12..	Assistant Business Manager
C. S. Wheeler, '12..	Corresponding Secretary
Associate Editors:	
H. A. Marsh, '11.	Wm. Bembower, '11.
S. R. Guard, '12.	O. H. Pollock, '12
Earl Jones, '12.	R. O. Brigham, '12.

#### SUBSCRIPTION PRICE

One year (9 issues) .....	\$0 50
Half year .....	30
Single copies .....	10

Advertising Rates on Application.

All literary matter should be addressed to  
the Editor; and all business communications  
to the Business Manager.

Entered at the postoffice at Columbus, Ohio,  
as second class matter.

**COLUMBUS, O., DEC. 15, 1910.**

### Editorial

The harvests of 1910 have now been practically completed. We have learned with much satisfaction that the results are exceeding the expectations during the growing period. Preliminary estimates have been made representing approximately the production of the important crops. These show that the aggregate production of crops for 1910 is about 8 per cent. greater than the crops of 1909. This is also about 9 per cent. greater than the average annual pro-

duction of the five preceding years. Of all the crops, the most important from a quantity standpoint, is corn. This shows a remarkable gain in both quantity and quality. In number of bushels, it is nearly three times as great as any other crop. There is an increase of almost two bushels more per acre than in 1909 and an additional increase in quality of about 3 per cent. In our own state, however, there is a slight decrease, the yield being 36.4 bushels per acre, as compared with 39.5 bushels for the previous year. This, however, is about one bushel more than the ten-year average. Not only in the United States alone, but taking the world as a whole, the agricultural situation is satisfactory. In Argentine and Australia, the two leading wheat producing countries of the Southern Hemisphere, there is a great increase in number of acres. The same favorable condition has been reflected in other countries of the Northern Hemisphere. It will be interesting to note whether this increase in production will materially affect prices.

The Student extends Christmas greetings to all its readers and wishes them joyous holidays, with a prosperous and happy New Year.

Fifty students have been enrolled in the short agricultural course, which begins after the first of the year. The bulletin of the short course has been out just ten days. If you have any friends who are thinking of enrolling, urge them to decide quickly.

Fifty boys from the Lake County Y. M. C. A. visited the University November 28th and were shown about by Supt. A. B. Graham, of the Extension Department.



## The Extension Department

That the Extension Department at Ohio State is in its busy season is demonstrated by the number of schools that are being held at this time. The following places are now the scenes of these schools or will be in the next few weeks: At Mt. Gilead, Morrow county, a large number of interested farmers and their wives are being entertained and benefited by the school being held there. The wives seem to be about as well represented as the men—the men will be doubly rewarded. Other schools of importance the same week are at Rutland, Berton, and Canal Dover, which promise to be well attended meetings.

The Extension Department opened its initial school at Twinsburg, Summit county, where Mr. A. S. Neale lectured from the dairy standpoint and Mr. Geo. Livingston spoke on farm crops.

A special Horticultural school was held at Port Clinton, where an expert fruit packer demonstrated to the people that ripe fruit could be safely sent to market when correctly packed. Professor Paddock gave some interesting and useful information along Horticultural lines, while Mr. F. E. Bear spoke on Soil Fertility with special reference to Horticulture.

At Waterville, Mr. W. W. Farnsworth gave talks on Manures for Orchards. Professor Whitmarsh, Assistant Entomologist at the Experiment Station, spoke of the insects that attack fruit and fruit trees.

On November 26th, at the County Life Conference held at Washington C. H., Prof. G. A. Bricker spoke on the following subjects: The Country Church, Rural School, Sanitation of Country

Homes and Barns, and on Farm Management.

Mr. E. D. Waid spoke to White county people on Farm Crops and Orchards on December 12 and 13th.

Mr. W. H. Darst, Assistant in Corn Improvement, visited Sulphur Grove on November 23, where a school was held.

At the different schools instructions for using litmus paper in testing for the acidity of soils have been given, and paper has been distributed to those desiring it.

The first applications for spraying demonstrations are coming in for February and March. The Department will make three trips. One hour talks and demonstrations will be given at each stop.

Two new phases in the Extension work that will interest many: "The Home Makers' Reading Course, the first issue of which contains "The Canning of Fruits and Vegetables," by Mrs. C. W. Foulk, who has recently been re-employed by the department. The other is "The Farmers' Reading Course." Professor Vivian has charge of this course. Personal replies will be sent to those interested in the questions brought up in these two courses for the small item, a stamp.

The regular December issue will discuss the following topics: Evergreens in Ohio, Drainage, Play and Recreation the Salvation of the Nation.

Bulletins on Orchardling and Dairying are being distributed along the Pennsylvania, Baltimore and Ohio, and the Norfolk and Western lines.

Professor Graham reports a great demand for lecturers on cooking and baking. Every one should be interested in this line of extension.



## ALUMNI NOTES



Four Ohio State University graduates have papers appearing in Volume I, of the Proceedings of the American Society of Agronomy, which has just been issued. The papers are as follows: The Size of Experimental Field Plots, Prof. F. W. Taylor, New Hampshire State College; Relation of Soil Surveys to Crop Surveys, Prof. E. O. Fippin, Cornell University; Some Results with Lime on Missouri Soils, Prof. M. F. Miller, University of Missouri; Instruction in Soil Physics, Prof. A. G. McCall, Ohio State University. All of the above men are graduates of the College of Agriculture Class, '00.

G. A. Cleland, ex. '12, passed through Columbus a few weeks ago and visited the University. He was on his way to Colorado, where he intends to settle and engage in the fruit business. This past year he leased a fruit orchard in Southern Ohio, from which he harvested a large crop.

Mr. Rae Parrot, ex-'08, and formerly of Lyndon, Ross Co., O., is now engaged in the Indian service at Rose Fork, Idaho. He was recently back on a visit, and is very enthusiastic over conditions in the West.

Sleeter Bull, '10, is instructor in Agricultural Chemistry at Pennsylvania State College.

Sylvan Shawan, '06, has purchased a large farm in Green county, near Xenia.

Chalmers De Pue, '09, has gone to Boston to take charge of the soil and entomological work of Olmstead Brothers, the landscape architects. He has full charge of these lines of work and reports everything going nicely. His address is 34 Bowker St., Brookline, Mass.

A. R. Moist, '08, who has been managing a large farm near Wheeling, W. Va., has recently accepted a very responsible position as manager of the Sheffield Stock Farm, near Glendale, Ohio.

H. H. Jewett, '10, has a position in the department of the State Entomologist of Maryland, which is connected with the Agricultural College at College Park.

R. C. Donighue, '06, is in the Division of Agronomy of the Department of Agriculture at North Dakota Agricultural College.

E. C. Cotton, '05, is working in the Entomology Department of the U. S. Department of Agriculture at Knoxville, Tenn.

Clifton D. Lowe, '10, is instructor in cultural Chemistry at Pennsylvania State College.

W. R. Clum, '10, was a visitor at the University during the last week in November.



# NEWS NOTES



## THE COLUMBUS HORTICULTURAL SOCIETY.

The December meeting of this society, whose officers and active members are largely drawn from our college circles, was treated to an illustrated lecture by Mr. John Brady, former City Forester of Cleveland. His subject was "School Gardens and the Care of Shade Trees." The lecturer gave a comprehensive account of what was being done in the way of school gardens in European countries, and the beginnings of this important work in a few places in our own country. Wherever given a fair trial these gardens have proved a signal success, and seem to be just adapted to the needs of the city boy and girl. Either the Horticultural or the Extension Department of the University should take up this work.

The students in the beginning class in Forestry had the privilege recently of hearing an instructive illustrated lecture by Mr. George Rettig, the landscape architect of Cleveland, who has charge of that branch of the city public service that relates to park forestry and street trees. He gave an account of the methods of planting, removing undesirable trees, fighting the numerous insect pests, and other similar topics. He also spoke briefly of tree surgery, and showed by the use of lantern slides, the injury done to street trees by telegraph, telephone and electric light and power companies. He assured the student that it not only required expert knowledge but tact and unfailing good temper to succeed in the department of public service in which he is engaged.

## APPLE SHOW.

The second state apple show will be held in Columbus under the auspices of the State Horticultural Society, January 9-14. The top story of the Lazarus building, the same that was used for the corn and apple show combined, last year, will be used. This year it is expected that the entire space will be occupied.

The subject of the Extension bulletin of the Agricultural College for November is How to Know Some Ohio Trees. It was written by Prof. Lazenby, of the Department of Forestry. It is simple and plain in its descriptions, is well illustrated, and can scarcely fail to be of great service to those whom it seeks to help.

Although this is only the second year since the establishment of the four-year course in Forestry, the department is making good progress. Those regularly registered in the course number 56. This number, together with those of other departments who are electing some subjects in the Forestry course, clearly show that the equipment and facilities must be enlarged.

The regular December meeting of the Forestry Club was adjourned for one week in order to give the students an opportunity to hear an illustrated lecture by City Forester John Boddy. Quite a number availed themselves of the privilege and heard an interesting and instructive address on the subject of "School Gardens and Care of Shade Trees."



Among other prizes on hogs shown at the International, the University received third and fourth on Berkshire barrows under 6 months; second on pen of three Berkshires; third on pen over 12 and under 18 months; first on Large Yorkshire barrows over 6 and under 12 months; first also, on pen over 12 and under 18 months; winning both prizes on Yorkshire pens over 12 and under 18 months; Champion Yorkshire barrow. In dressed carcass contest we won second prize on carcass weighing over 200 and less than 300 lbs. The Shorthorn calf, Master Strathallen, won second prize in a large class. In college display, we won second place. This entitled us to one of Clay, Robinson & Co.'s special prizes.

The Natural History Society held its regular meeting in Orton Hall on November 28th. There were three papers presented. Mr. Hood spoke on "Experiences in Government Service." He gave a very interesting and instructive talk on his experiences in Government work in the South. Mr. Metcalf talked on the "Distribution of Plants and Animals" in North Carolina from his own observations. The third paper was by Mr. Martin, "Relation of Plant Physiology to Forestry." The papers were followed with a discussion by the members.

An apple congress was called by the Governor of Colorado to meet Dec. 15, 16 and 17, at Denver. The governor appointed delegates from his own state and called for delegates from other states to meet with them at a Denver hotel to discuss various phases and problems of the apple industry. Prof. Paddock, of the Horticultural Department, is a member of the advisory board of this congress.

Monday evening, Dec. 12, fire of unknown origin destroyed the old barn, one of the landmarks of the campus, having been built previous to the time when the Experiment Station was removed to Wooster. Fortunately, no animals except a few pigs were in the barn and these were gotten out safely. A large amount of the farm machinery was destroyed, its value being about \$2,500. Very little hay was in the barn, but about 300 bushels of potatoes were stored in the basement. The total loss is estimated to be about \$10,000.

G. A. Bricker, Assistant in Agricultural Education of the Agricultural Extension Department, is the author of a series of articles now running in the Ohio Teacher on "Reasons for Teaching Agriculture in the Public Schools." Prof. Bricker is also conducting a new line of work in promoting agricultural education. It is called "Country Life Conference," and the first session was held in Washington C. H., Ohio, on November 25 and 26th, by the Extension Department.

The Extension School at Port Clinton, Nov. 28 to Dec. 2, was quite successful. This being a Horticultural section, Horticulture and Soil Fertility were the principal topics discussed. Stock-feeding from the orchardist's standpoint and packing demonstrations were interesting features of the course.

The Ohio State University recently purchased a team of grade Belgians. They are chestnut sorrels in color, with light mains and tails. The team was purchased near Ostrander, Ohio, and was delivered last Saturday.

Did you subscribe for this, or are you reading some other fellow's?

### THE WOOL DISPLAY.

Professor Plumb, at the request of the management of the International, installed among the college exhibits an extensive and highly instructive display of woollen products. Fleeces were shown from Australia, South Africa and South America in comparison with those produced in this country. Differences in wools of different types was brought out by showing the woollen products made from each. Foreign wools are cleaner and more uniform than our own, and the fleeces are tied to meet the demands of the manufacturer. One feature of the display was a sample of Lincoln fleece showing two feet of staple. It was secured by allowing the sheep to go unshorn for several years.

If you receive a sample copy of this magazine, consider it an invitation to subscribe.

Although Ohio State made a higher score, 4951, in a possible 6000, than the winning team last year in the Students' Judging contest, we were forced down to a comparatively low standing. Missouri won first honors. The old-time champion, Iowa, was forced to take third place, being beaten by Nebraska by only 3 points in 6000. Texas and Manitoba followed closely in the order named, with Ohio in sixth place. Missouri had a long lead, being 250 points above Nebraska. To show how well the other contestants were bunched, Ohio had only 178 points less than Nebraska. Ontario, Kansas and Kentucky complete the list of contestants.

About 20 students and 3 instructors attended the International. They report the show larger and better than ever.

## It Makes Money Where You Now Lose

Dairying is just as much of a science if rightly managed as is butter or cheese-making. Today every step in the making of butter and cheese is taken with reason, not by the "rule of thumb," as formerly. So, also, has our knowledge of cleanliness advanced.

Soap and water will make the separator and milk containers look clean, but it requires the work of

Indian in Circle



In Every Package

It is bacteria that steals the richness and quality from your milk, that robs it of much of its food value, that sets a price on your milk much below where it otherwise would be.

Then why not be as modern in your cleaning as you are up to date in selecting your cows?

Ask your dealer or supply man to send you Wyandotte Dairyman's Cleaner and Cleanser.

### Wyandotte Dairyman's Cleaner and Cleanser

to really finish the work. Cleanliness used to be a matter for the eye to detect. It is now known that a cleanliness far greater than soap and water is needed, a cleanliness that cleans clean. Not only must the visible dirt be removed, but also every particle of matter that may serve as food or lodgment for bacteria.

**THE J. B. FORD CO., Sole Mfrs.**  
**WYANDOTTE, MICH., U. S. A.**

It helps us and pleases the advertiser when you say, "I saw it in The Agricultural Student."

# PHOTOS

FROM THE OLD RELIABLE

*Baker Art Gallery*

COLUMBUS, O.

STATE AND HIGH STS., ARE THE BEST.

Special Rates to O. S. U. Students.

## Savings Invested in Realty

Put your money in residential building lots. Be sure they are in improved sections. Buy close to a big city. Purchase early, don't let others make profits out of you. The greatest fortunes were made by realty investments. We will offer 1000 choice building lots on Dec. 1st, at prices that will pay very handsome profits. Terms of purchase, \$25.00 cash, per lot, balance in thirty-six equal payments. No interest or taxes during this period. If you die before completing your payments, a deed is given your heirs, without further cost. Size of lots, 25 x 120 feet and upward. Price of lots, \$75.00 and upward, according to location. By investing in land you own something for your money. Investments in stocks or saving accounts are under the control of others. We guarantee you a profit of at least 25 per cent. for the first year. Subscription lists are now open. By remitting us \$10.00 per lot, subscribers get first selections. The first 500 subscribers will also receive a credit of 10 per cent. on their purchase. Act now. Let us make money for you and protect your savings.

We want agents in your locality. Write us the names and addresses of some of your neighbors. Do it now.

**BUFFALO LAND SECURITY CO.**

ELLICOTT SQ., BUFFALO, N. Y.

## A STANDARD WORK REVISED

The Tenth (Revised) Edition of

## "FEEDS AND FEEDING"

By Prof. W. A. Henry.

Fresh from the press. Recognized as one of the best works on feeding. Used as a textbook in nearly every Agricultural College.

The Regular Price of this valuable book, Feeds and Feeding, is..... \$2 25

The Agricultural Student, remainder of the year, including the big Corn issue 35

Total ..... \$2 60

Our Price for Both ..... \$2 25

Or including the Agricultural Student another year, 1911-12 ..... \$2 60

Book sent prepaid. Make remittances to

**THE AGRICULTURAL STUDENT,**  
Columbus, O.

Note—This offer does not apply to students at the Ohio Agricultural College.

## THE DAIRYMAN WHO HAS CREAM

to sell will find his best interests served by shipping it to us. Our co-operative plan brings the best results to the shipper. Write for particulars.

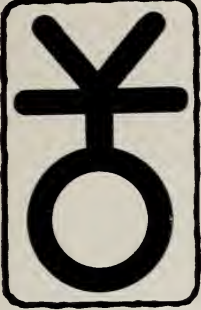
A Postal Will Bring Booklet.

**The West Jefferson Creamery Co.**

COLUMBUS, OHIO



**ORR-KIEFER**



**Orr-Kiefer Studio Co.**

199-201 SOUTH HIGH STREET

*Artistic Photography*

*"Just a little better than the best"*  
SPECIAL RATES TO STUDENTS

**COLVMBVS, O.** *We Frame Pictures of all kinds—RIGHT*

# A Good Reputation

is the foundation I build on and every sale I make must strengthen that reputation. If it doesn't, it is a poor sale for both of us. MY CLOTHES help build what I am. See my offerings at \$20 to \$30.

Your Cleaning and Pressing Solicited.

## The "So-Different" Tailory

(C. H. BRADLEY, Prop.)

HIGH STREET AT TENTH AVENUE.

OPEN EVENINGS.

## "THE COLLEGE INN"

"DAVE" WARWICK, Proprietor.

**Bowling, Pool, Magazines, Cigars**

Finest Amusement Parlor in the City

1547 NORTH HIGH.

BELL, NORTH 3489

# Prominent Breeders of Live Stock

We know these breeders to be reliable and safe.

## Franklin Berkshire Herd

Herd headed by Premier C's Lad, 128000, one of Longfellow Premier C's best sons, and Royal Champion Improver, a model son of Rival's Champion. Stock for sale at all times. I sell nothing but the best for breeding purposes.

**A. E. FISHER**

Grove City, Franklin County, Ohio.  
P. O. Orient, Ohio.

## Cherry Valley Devon Herd

My Devons are bred for milk and beef qualities. The farmers' cow and no mistake. Call and see my herd and be convinced that the Devon is the best of cattle for beef, butter, milk and beauty.

**J. C. SHAW**

P. O. Box 537

NEWARK, OHIO.

# OAKLAND SHORT HORNS

The result of the past season's showing at the leading fairs and stock shows is good evidence of the quality and high grade of the Oakland Herd. The calves of

## GLENBROOK SULTAN

the great breeding bull, have been outranked but once in the past season's show.

Visit the farm and be convinced that the best are found there.

## THOS. JOHNSON & SON

COLUMBUS, OHIO.

# America's Leading Horse Importers

- The Records of the State Board of Agriculture show that for Twenty Years at the Ohio State Fair the McLAUGHLIN PERCHERON and FRENCH COACH STALLIONS have won nearly all the FIRST PRIZES and ALL CHAMPIONSHIPS. This year was no exception.

If you want one of these good horses for the price others ask for ordinary ones, write us or come and see us. We have some Percheron mares.

## McLAUGHLIN BROS.

COLUMBUS, OHIO.

Kindly mention THE AGRICULTURAL STUDENT when answering Advertisers.

# Remarkable Work on Practical Farming

Just completed by L. H. Bailey, Director of the College of  
Agriculture, Cornell University.

## SPECIAL OFFER

### GOOD FOR A SHORT TIME ONLY

A COMPLETE LIBRARY OF OUTDOOR BOOKS IN FOUR VOLUMES

Thoroughly Revised and Up-to-Date.

This great work of Prof. Bailey's is most exceptional. The Agricultural Student has made arrangements with the Publishers whereby its readers may secure the complete work on unusually favorable terms, because we know that EVERY READER OF THE AGRICULTURAL STUDENT WILL FIND IT INTERESTING AND PROFITABLE. No such work has ever before been published. No one man alone could possibly write so complete, authentic and practical a library on farm and stock; for, in addition to Prof. Bailey's own able writing, the work embraces the concentrated experience of 300 specialists, each one of whom has been chosen as being the very highest living authority on some particular phase of farming. This work is called the CYCLOPEDIA OF AMERICAN AGRICULTURE and is complete in four handsome, quarto volumes, so profusely and accurately illustrated that every part of the text is made clear for the veriest novice. A VOLUME ON FARM LIVE STOCK treats each animal separately and thoroughly. Cattle, horses, sheep, swine, poultry and all domestic animals; how to select them and keep them in health, and how to breed successfully. Some of the best known experts in the country have made this volume the most practical treatise on farm stock ever published. A volume on the farm and its tillage takes up a general survey of the agricultural regions of North America. It includes a practical view of each system of farming, taking them up in detail. The construction of farm buildings and drainage systems are especially dealt with. A volume on Products of the Farm. This takes up at some length each plant grown on the farm, with a description of its insect enemies and diseases and their prevention and cure. A timely discussion of the principles of farm Forestry demands special mention. A final volume deals in the most up-to-date manner with the sociological problems of farm life and the relation of agricultural interests to our national welfare. It sets forth the business side of farming.

**THE CYCLOPEDIA OF AMERICAN HORTICULTURE**, by the same author, is the most comprehensive review of the vegetable world yet made by an American. The work discusses the cultivation of fruits, flowers and garden vegetables, describes all species known to the trade, outlines the possibilities of the various states, and presents biographies of all former leading horticulturists. Expert cultivators and botanists have contributed on their various specialties. In size and appearance it is the equal of the Cyclopedia of American Agriculture and comes at the same price.

### SPECIAL ORDER BLANK

THE AGRICULTURAL STUDENT,

Columbus, Ohio.

Date .....

Please enter my name as a subscriber for the new Cyclopedia of American Agriculture, or the Cyclopedia of American Horticulture, (draw a line through the one not wanted) to be sent to me, charges prepaid, complete in four illustrated volumes, bound in green buckram binding, for which I agree to pay the Publisher the sum of \$20.00 as follows: \$2.00 on first delivery, and \$2.00 on the first of every month thereafter until the whole amount has been paid.

Signature .....Residence Address.....

Business Address .....County.....

Town .....Reference .....

Kindly mention THE AGRICULTURAL STUDENT when answering Advertisers.



# Varsity Barber Shop

E. E. GRABILL, Proprietor.

1585 NORTH HIGH ST.

FOR THOSE WHO OWN



**SHEEP  
HOGS  
CATTLE  
HORSES  
POULTRY  
DOGS  
PET  
STOCK**

Its use permitted in official dipping for scab on sheep.

Let us quote you on dipping tanks.

**W. E. Minor & Co.**

800 LONG AVE., CLEVELAND, O.

Used and endorsed by the Ohio State University.

—USE THE—

**Oliver Typewriter**

You can rent an Oliver typewriter for three dollars per month from The Oliver Typewriter Agency, Nos. 206-207 Schultz Bldg., Columbus, O.

FRATERNITIES AND BOARDING CLUBS

Always Find Our

**Meats and  
Groceries**  
STRICTLY FIRST CLASS

**Abernathy Bros.**

1609 HIGHLAND STREET

Citz. Phone 16504

Bell, North 857

**BLACKWOOD  
GREEN & CO.**

**HARDWARE**

**STOVES AND HOUSE FURNISHING GOODS  
SLATE AND METAL ROOFING**

624 NORTH HIGH STREET

COLUMBUS, OHIO

—Citizens 3796—

—Bell 1590—

**HIGH STREET TAILORS**

166 NORTH HIGH STREET

are showing the most extensive line of blue, gray and green fabrics ever offered in Columbus. Newest patterns. Best paid cutters in the city.

**POPULAR PRICES**

Let us build a suit that will enlarge your circle of friends. CALL.

We are complete outfitters of all plants for handling milk products. If you are in the dairy manufacturing business in any capacity and want to keep up with latest and best methods, or if you are thinking of going into it, the first thing to do is to get into communication with us. We are at your service in the planning, building and equipping of Creameries, Cheese Factories, Sanitary Milk Plants and Private Dairies. Our experience in this line is worth money to you, yet it costs you nothing but the asking.

## CREAMERY PACKAGE MFG. CO.

182 TO 188 E. KINZIE ST.

CHICAGO



## The 1910 "Simplex" Link Blade Cream Separator

LIGHTEST RUNNING.

LARGEST CAPACITIES.

CLOSEST SKIMMING.

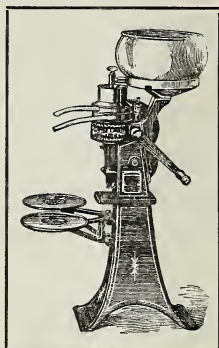
The Only Practical Large Capacity Separator

Has more exclusive patented features of merit than all others—Has all the desirable points that can be put into a cream separator.

500 lbs.....\$75.00	900 lbs.....\$ 90.00
700 lbs..... 80.00	1100 lbs..... 100.00

**D. H. BURRELL & CO., Manfrs., Little Falls, N. Y.**

If you saw it in THE STUDENT, tell the Advertiser so.



# Winter Dairying Profitable

**How to make it more so**

With winter coming on and butter selling at 30 to 50 cents per pound, cream becomes a very valuable commodity, and it is doubly important that not a drop be wasted or lost.

If you are still using the "gravity" setting method you are losing a pound of butter-fat in the skim-milk for every four or five pounds you get.

## You Save All the Cream with a **DE LAVAL**

Its advantages over inferior cream separators are greatest at the season when milk is often cool and cows are old in lactation.

There is only one cream separator made that will skim cool milk clean and that is the DE LAVAL. It makes winter dairying more profitable. If you haven't a DE LAVAL the cream you lose will cost you more than it will to purchase this great cream saver.

Write for catalog and ask about our easy payment plan.

### **THE DE LAVAL SEPARATOR CO.**

165-167 BROADWAY  
NEW YORK

42 E. MADISON STREET  
CHICAGO

DRUM & SACRAMENTO STS.  
SAN FRANCISCO

173-178 WILLIAM STREET  
MONTREAL

14 & 16 PRINCESS ST.  
WINNIPEG

1016 WESTERN AVENUE  
SEATTLE